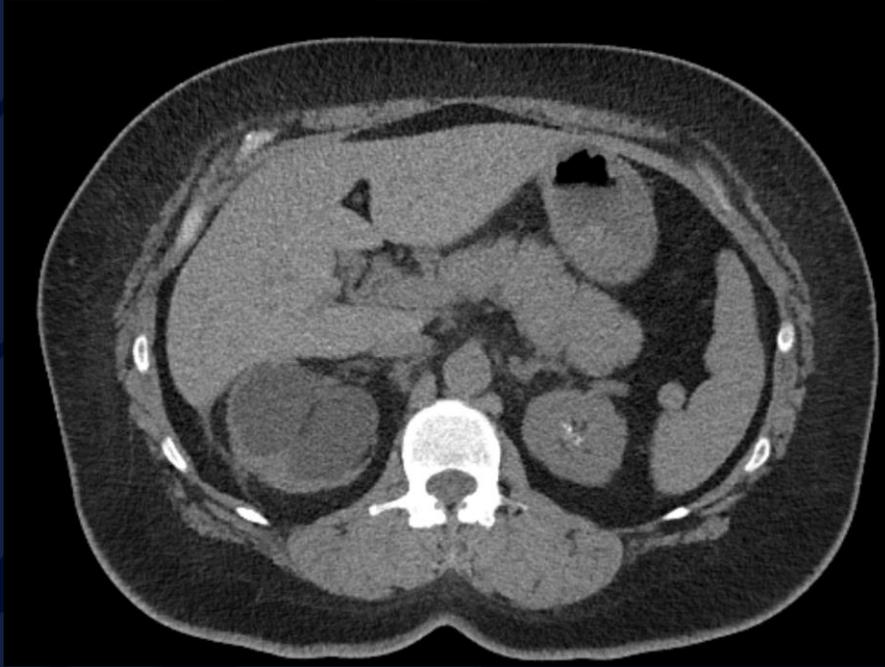


A large, stylized oak leaf graphic in a dark blue color, positioned on the left side of the slide, partially overlapping the text.

40 year old female presents with flank pain

Elena G. Violari MD

David Karimeddini MD



Renal W/Lasix 8/8/2018

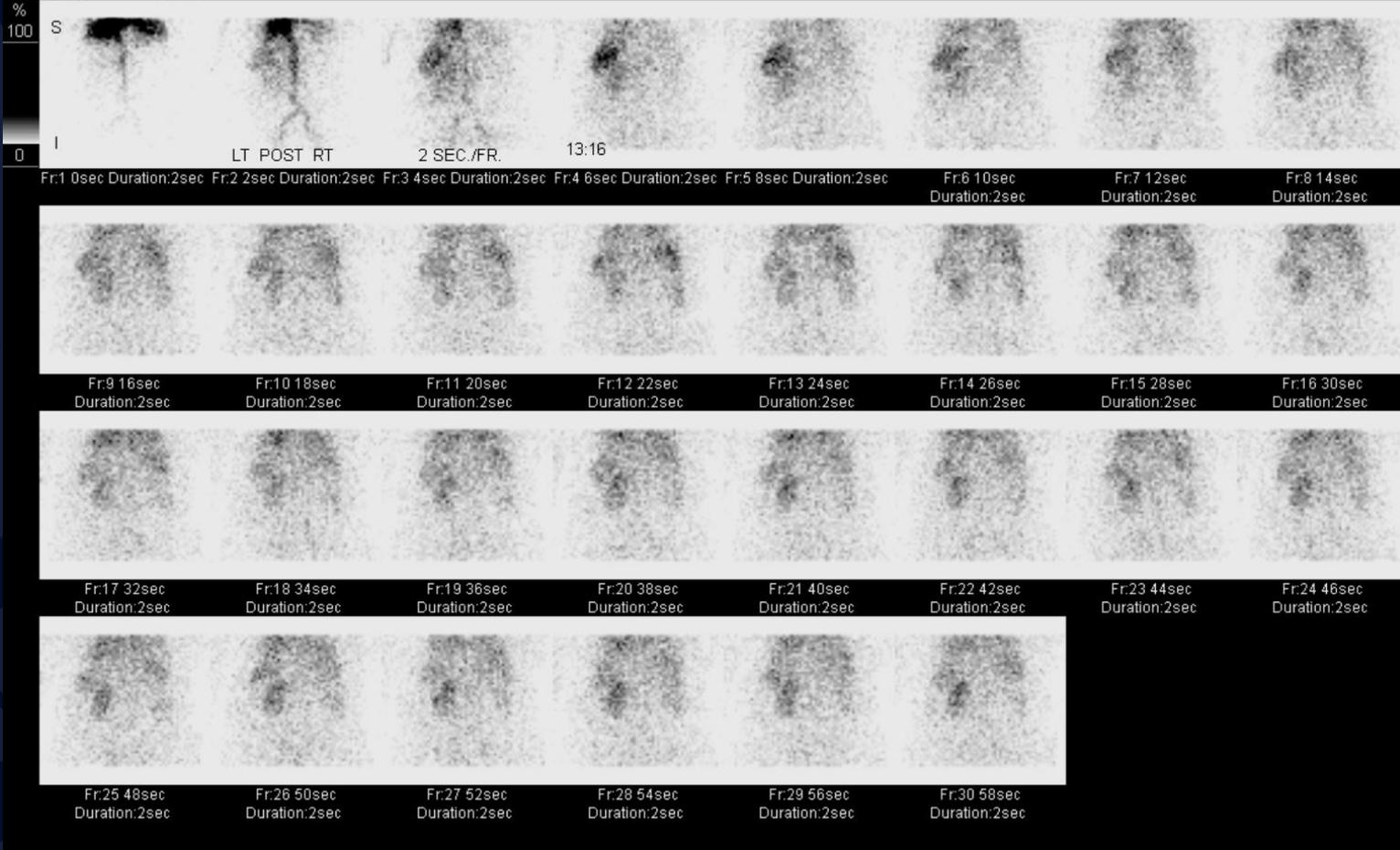
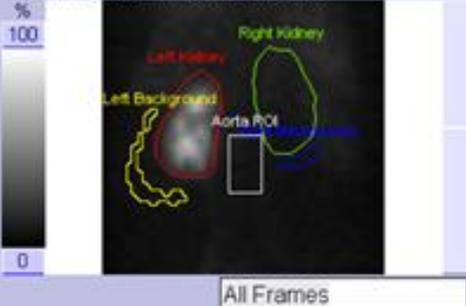


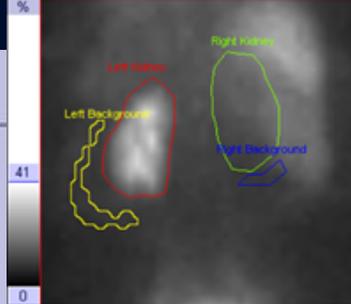
Table of Result Summary

Parameters	Left	Right
Split Function (%)	89.4	10.6
Kidney Counts (cpm)	110756	13137
Kidney Depth (cm)	8.934	8.996
Renal Retention	0.460	0.320
Time of Max (min)	3.001	0.400
Time of 1/2 Max (min)	14.7	0.445
Time from Max to 1/2 Max (min)	11.7	0.045

Renal W/Lasix [Results] 8/8/2018

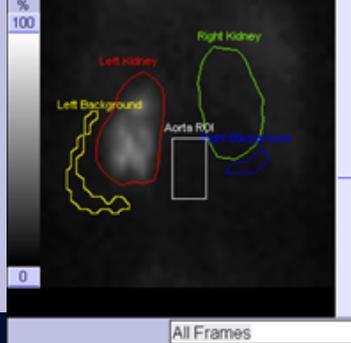


Renal W/Lasix [Results] 8/8/2018



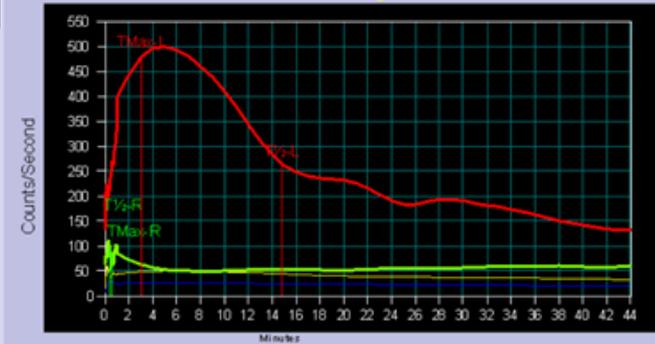
- Left Kidney
- Right Kidney
- Left Background
- Right Background

Renal W/Lasix [Results] 8/8/2018

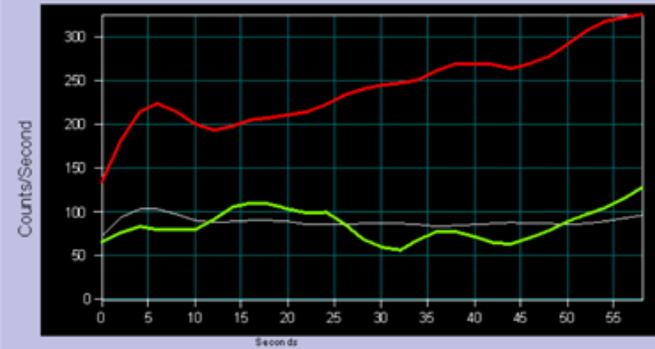


- Left Kidney
- Right Kidney
- Aorta

Kidney



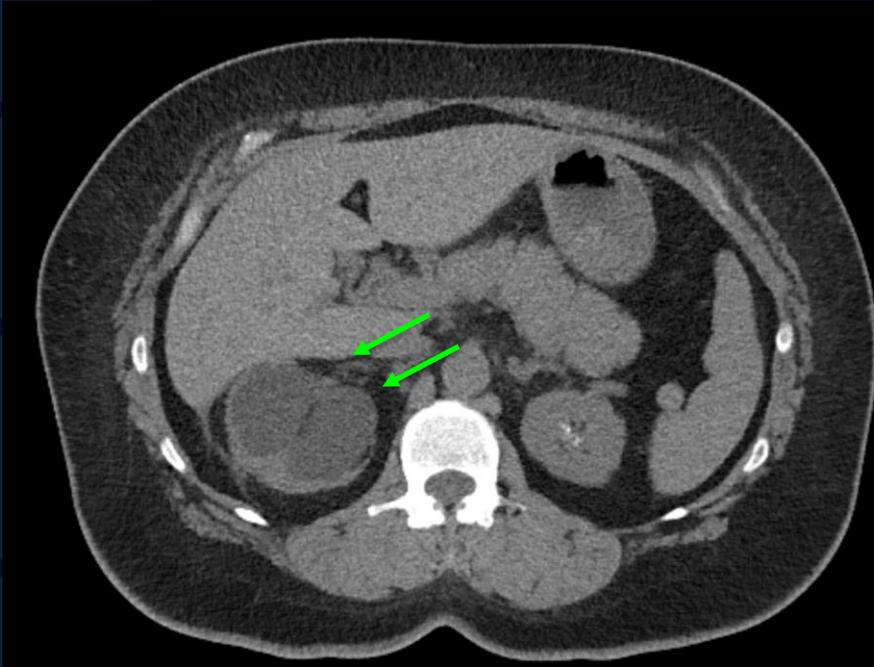
Flow



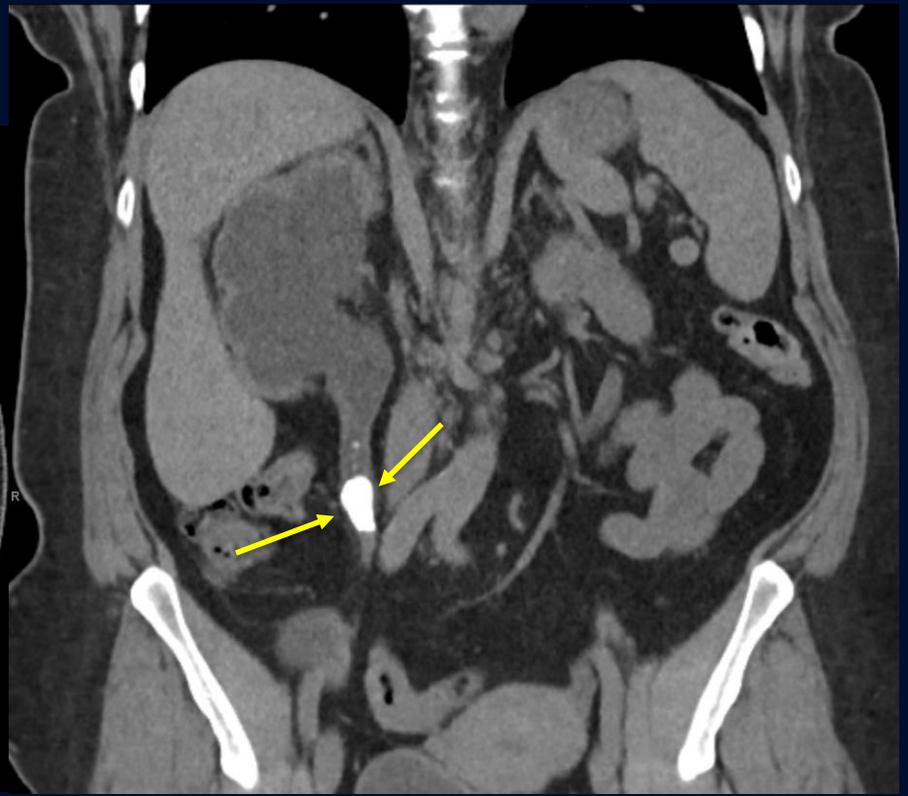
A large, stylized oak leaf graphic in a dark blue color, positioned on the left side of the slide. The leaf has a prominent central vein and several smaller veins branching off it. The leaf's edge is serrated.

?

Obstructive Uropathy

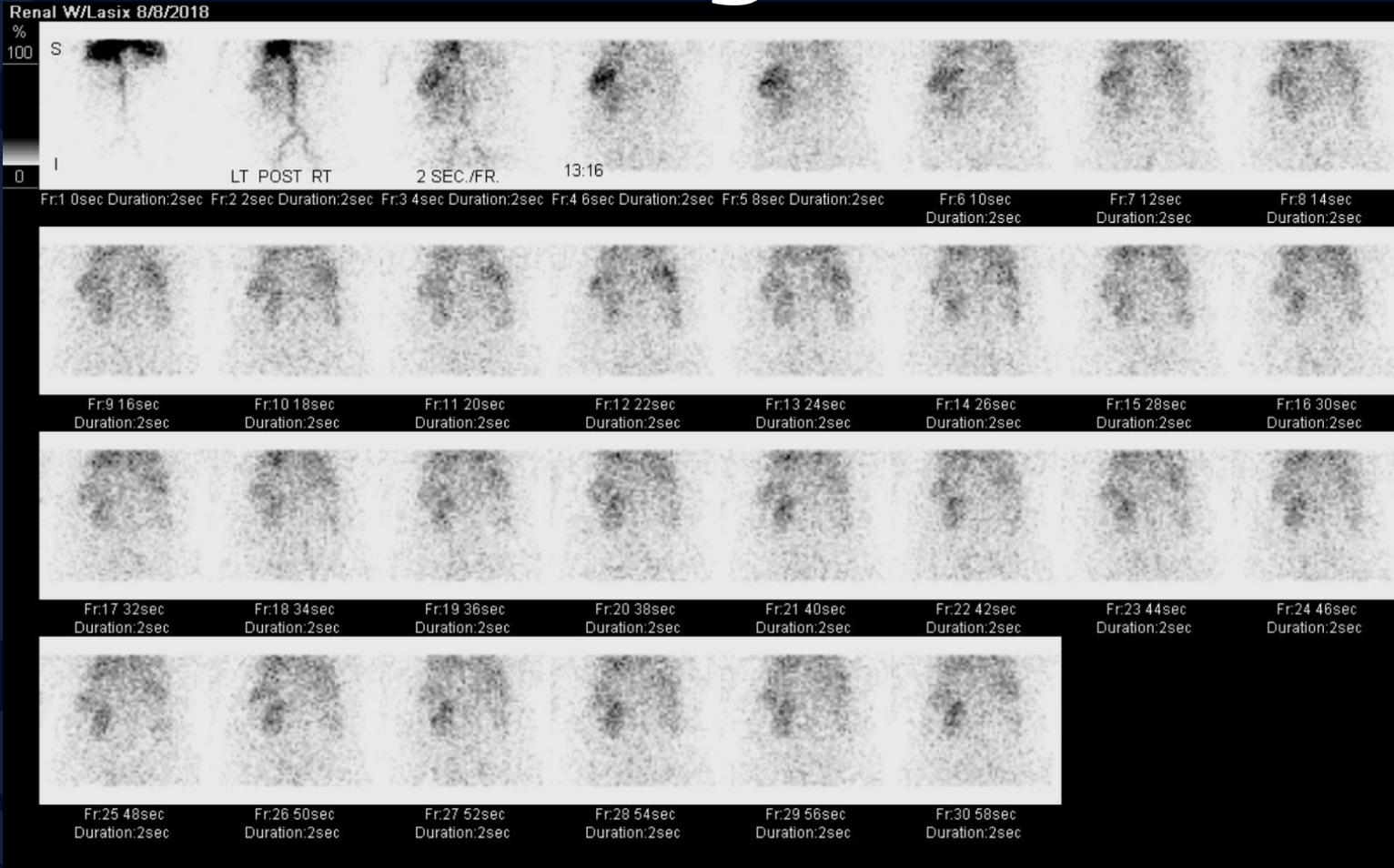


Severe
hydronephrosis



Severe hydronephrosis
secondary to a large proximal ureteral
stone

Renogram



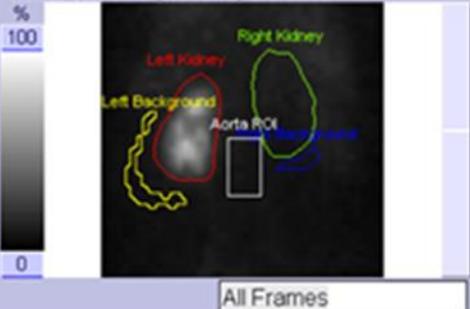
Right kidney shows absent perfusion during the angiographic phase as well as absent uptake.

Renogram

Table of Result Summary

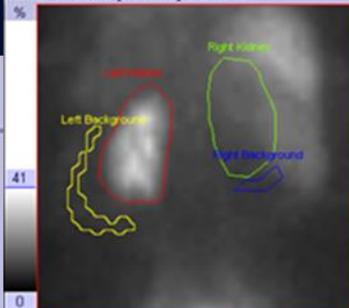
Parameters	Left	Right
Split Function (%)	89.4	10.6
Kidney Counts (cpm)	110756	13137
Kidney Depth (cm)	8.934	8.996
Renal Retention	0.460	0.320
Time of Max (min)	3.001	0.400
Time of 1/2 Max (min)	14.7	0.445
Time from Max to 1/2 Max (min)	11.7	0.045

Renal W/Lasix [Results] 8/8/2018



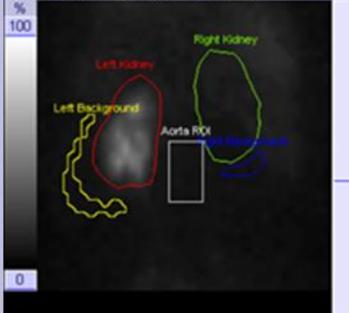
All Frames

Renal W/Lasix [Results] 8/8/2018



Left Kidney
Right Kidney
Left Background
Right Background

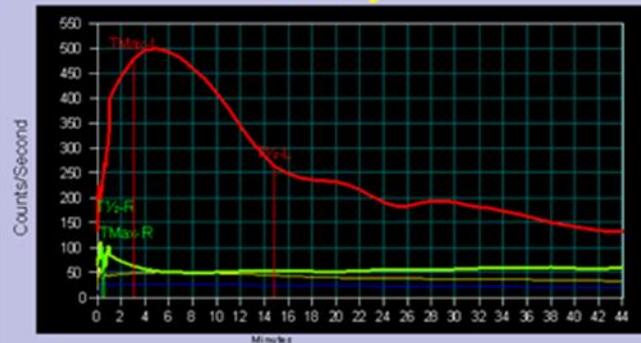
Renal W/Lasix [Results] 8/8/2018



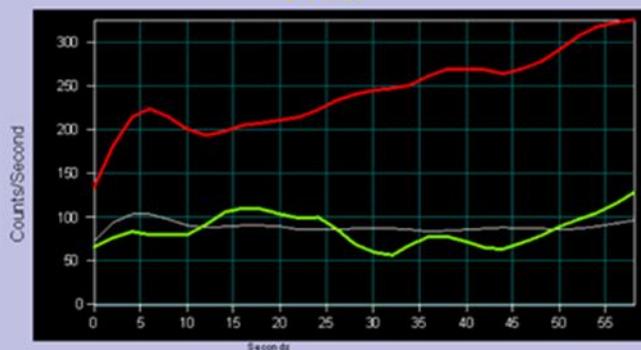
Left Kidney
Right Kidney
Aorta

All Frames

Kidney



Flow



Renogram

Tc-99m MAG 3:

- Mechanism: **Tubular Secretion**
- Dose: 10-20 mCi
- Estimates: **Effective renal plasma flow (ERPF)** which estimates renal clearance (80% secretion and 20% GFR)
- **ADVANTAGE:** protein bound and provides better target to background than DTPA
- **DISADVANTAGE:** Indirectly shows renal function

Tc-99m DTPA:

- Mechanism: Glomerular Filtration
- Dose: 10-20 mCi
- Estimates: GFR
- **ADVANTAGE:** Great for renal physiology (function)
- **DISADVANTAGE:** Poor imaging characteristics in cases of renal insufficiency

TECHNIQUE/ANALYSIS:

“Angiogram”: 1 second per frame x 60 seconds

“Nephrogram”: 30-45 minutes at 2-3 minutes intervals

Split function: measure counts in the ROI's at 2-3 minutes, before excretion occurs

Clearance metrics:

- Time to peak - quicker the better. In general , normal is 3-5 minutes
- T1/2 clearance - quicker the better. Normal is 7-10 minutes
- Fraction remaining at 20 minutes - lesser the better

Renogram

Diuretic Renogram is performed to evaluate whether a persistent nephrogram is secondary to obstruction or not. If Lasix triggers drainage, then it's not obstructed.

In our case, Lasix was not required.

Dose: 0.3-0.5 mg/kg in adults = 20-40 mg, 80 mg or more for patients with renal failure or on chronic Lasix

Dose: 1 mg/kg in infants = 5-10 mg

Bladder needs to be empty - put in a Foley if needed.

Classification

- **"Normal" = $T_{1/2} < 10$ minutes**
- **"Indeterminate for obstruction" = 10 - 20 minutes**
- **"Mechanical obstruction" = $T_{1/2} > 20$ minutes**

References:

1. Radiopedia.com
2. Esteves FP, Taylor A, Manatunga A et-al. 99mTc-MAG3 renography: normal values for MAG3 clearance and curve parameters, excretory parameters, and residual urine volume. Am J Roentgenol. 2006;187 (6): W610-7
3. Mallek R, Bankier AA, Etele-Hainz A et-al. Distinction between obstructive and nonobstructive hydronephrosis: value of diuresis duplex Doppler sonography. Am J Roentgenol. 1996;166 (1): 113-7.
4. Kleiner B, Callen PW, Filly RA. Sonographic analysis of the fetus with ureteropelvic junction obstruction. Am J Roentgenol. 1987;148 (2): 359-63.
5. Guiberteau MJ. Essentials of Nuclear Medicine Imaging: Expert Consult - Online and Print, 6e. Saunders. ISBN:1455701041.